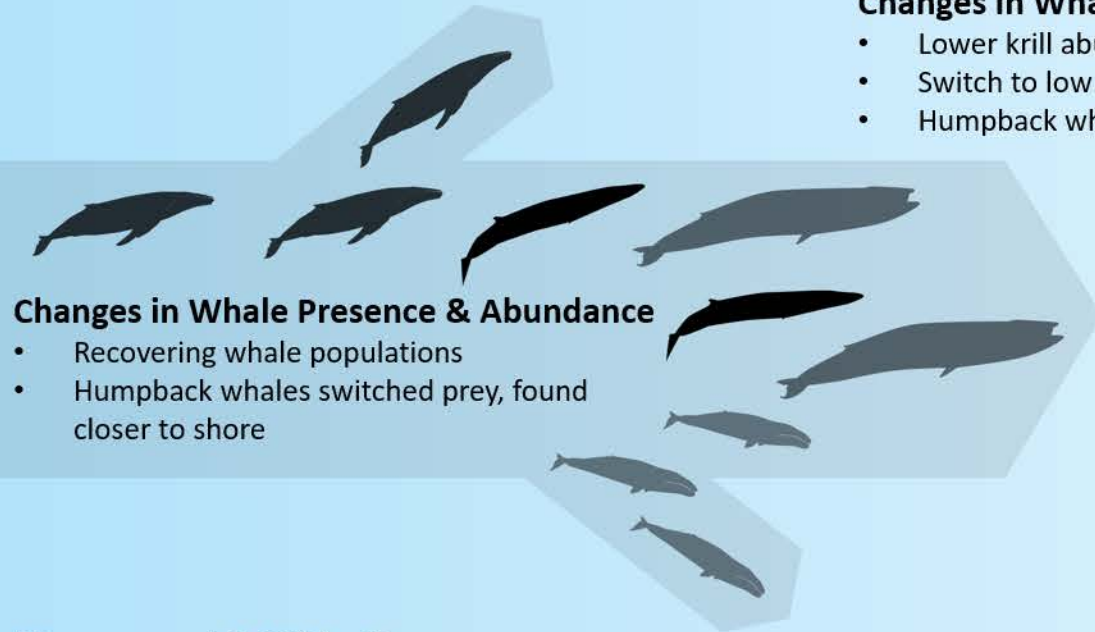


UNDERSTANDING WHALE ENTANGLEMENTS OFF THE U.S. WEST COAST



Changes in Whale Presence & Abundance

- Recovering whale populations
- Humpback whales switched prey, found closer to shore

Management & Mitigation

Fishery management coastwide could ask these following questions related to entanglement before/during seasons and take actions as a result.

- Are there delays in the fishing season or other factors that may lead to higher fishing effort when whales are on the fishing grounds?
- Does the distribution of krill and forage fish on fishing grounds suggest an increased risk of fisheries interactions with whales?
- Are there known or expected high concentrations of whales on the fishing grounds?
- Are there recent higher numbers of whale entanglements in the fishery or nearby?

Changes in Ocean Conditions

- Persistent marine heat wave
- Massive bloom of toxic algae

Changes in Whales' Prey

- Lower krill abundance off shelf break
- Switch to low abundance anchovies nearshore
- Humpback whales seek other prey further north

KRILL

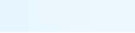
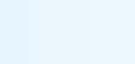


ANCHOVIES



Changes in Dungeness Crab Fishery

- Harmful algal bloom delayed opening of fishery in 2016
- More crab fishing gear when whale concentrations were high



400%

increase of confirmed whale entanglements

Record increases in whale entanglements in recent years. Confirmed whale entanglements on the WA, OR, CA coast increased 400% to a historic high of 50 in 2015, from an average of 10 per year pre-2014.

While many entanglements in recent years have been reported in Central CA, we know at least some of these entanglements occurred elsewhere along the West Coast.

Fishing Gear

Most of the whale entanglements are due to unknown types of fishing gear; of the fishing gear that we can identify, trap/pot fisheries are the primary source.

Gear from the commercial Dungeness crab fishery, the largest trap fishery off the West Coast, has the highest number of confirmed entanglement reports.